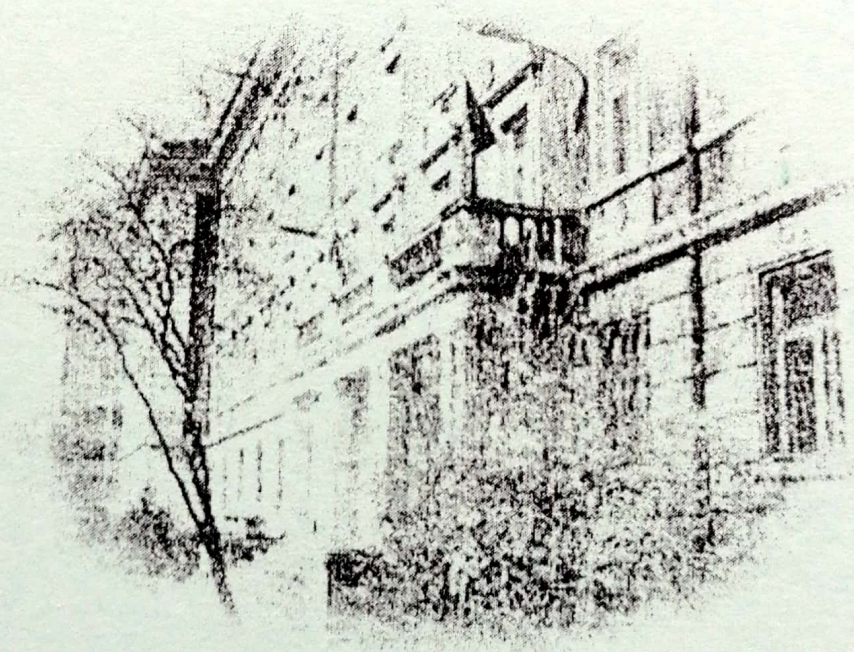




**NATIONAL SCIENTIFIC CONFERENCE  
“75 YEARS INSTITUTE OF NEUROBIOLOGY”**

**DECEMBER 15-16, 2022  
Sofia**



**BOOK OF ABSTRACTS**



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## SEASONAL VARIATIONS IN ENZYME ACTIVITY IN *OVIS ARIES* SEMINAL PLASMA

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Sheep (*Ovis aries*) are mainly seasonally polycyclic animals. Sperm production is influenced by many factors, including daylight length, climate temperature, humidity, and melatonin secretion, with females becoming fertile in early autumn and remaining fertile through mid-winter (October–February). Seminal plasma is a complex fluid that is a functional modulator of sperm function known to inhibit and stimulate sperm function and viability. Some seminal plasma proteins are capable of binding to the sperm plasma membrane and have an important role in sperm capacitation and egg fertilization. A variety of enzymes in the seminal plasma protect the sperm membrane from ROS-induced damage and lipid peroxidation through the activity of the antioxidant enzyme defense system. Regarding this, the aim of our study is to determine the biochemical changes that occur during the breeding campaign of the species *Ovis aries* and beyond. To fulfill the set goal, we have examined 6 ejaculates, spectrophotometrically. As a result, we found higher antioxidant enzyme protection outside the insemination campaign in glutathione (GSH) concentration and glutathione peroxidase (GPx) activity and non-significant differences in glutathione reductase (GR) activity. The enzyme activities of lactate dehydrogenase (LDH) and alkaline phosphatase (ALP) were higher during the breeding season of the animals. In conclusion, a higher protective antioxidant system may help ensure adequate sperm fertilization potential when reproductive conditions are suboptimal. However, further research is needed to determine the mechanisms of action of the antioxidant enzyme and the relationships between indicators for determining sperm quality.

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